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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,729	04/05/2001	Cecilia Brandel	47253-00003	6051

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EXAMINER

ABEBE, DANIEL DEMELASH

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 12/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/826,729	Applicant(s) BRANDEL ET AL.	
	Examiner Daniel D Abebe	Art Unit 2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/26/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,4,6,9 & 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Dubnowski et al. (U.S. Patent 4015088).

Regarding claims 1 & 6, Dubnowski et al. discloses a method of estimating pitch in a speech signal, comprising the steps of (Abstract; Fig.1):

- a. Sampling the speech signal to obtain a series of samples, dividing the series of samples into segments [words], each segment having a fixed number of consecutive samples (10 ms) (Col 7, Line 55; Col 6, Line 18)
- b. Calculating for each segment a conformity function for the signal, detecting peaks in the conformity function (Fig 1, 21, 22), the method further comprising the steps of:
 - providing an intermediate signal derived from the speech signal, converting said intermediate signal to a binary signal, said binary signal being set to logical "1" where the

intermediate signal exceeds a pre-selected threshold and to logical "0" where the intermediate signal does not exceed the pre-selected threshold (Col 8, Line 33 –68). Dubnowski describes a clipper processor [peak picker] that basically assigns a logical representation of the peak by giving it a value of -1, 0, +1 based on its strength about a predetermined threshold. Additional coding is added to make it a 2 bit digital word [claimed binary signal] (Col 9, line 9 and Col 10, Line 46).

- c. Calculating an autocorrelation of the binary signal, and using distance between peaks in the autocorrelation of the binary signal as an estimate of the pitch (Col 9, Line 64; Col 11, Line 5).

Regarding claims 4 & 9, Dubnowski et al. disclose a method of: selecting, if the peak corresponding to the distance between the peaks is represented by a number of samples, the sample having the maximum amplitude of said conformity function as the estimate of the pitch (Col 11, Lines 10 – 15).

Regarding claim 11, Dubnowski et al. disclose a device that is an integrated circuit [clipping and autocorrelation processor] (Fig. 1).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 2,3,7 & 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dubnowski (U.S. Patent 4015088) and further in view of Sasaki (U.S. Patent 6377915).

Regarding claims 2,3,7 & 8, Dubnowski et al. do not disclose a method wherein the intermediate or autocorrelation signal is provided by filtering the speech signal through a filter based on a set of filter parameters estimated by using linear predictive analysis (LPA). However, Sasaki teaches the use of LP analysis and filtering function in a decoder (Fig1 (117) & (120)). Linear prediction analysis is commonly used to obtain linear prediction coefficients in the modeling of speech and filtering.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify Dubnowski et al. with the use of LP analysis and filtering as taught by Sasaki since it the most efficient means of processing speech.

6. Claims 5 & 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dubnowski et al. (U.S. Patent 4015088) in view of McDonough (U.S. Patent 5784532).

Regarding claims 5 & 10, Dubnowski et al. do not disclose the use in a mobile telephone. However, McDonough et al. teach the use of a pitch detector used in a voice coder in a mobile phone. Voice coders that utilize a pitch feature are commonplace in digital communication systems including mobile phones.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify Dubnowski et al. with the use in a mobile phone as taught by McDonough et al. since it would have benefited such a system to use a less computationally intensive pitch detection algorithm.

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With regards to the new claims 12 and 13, Dubnowski et al. discloses where the autocorrelation is obtained from the input binary using a simple logic circuit which detects the binary state of the speech samples (Col.2, line 65-Col.3, line 5).

Response to Arguments

Applicant's arguments filed on 7/26/2004 have been fully considered but they are not persuasive.

Applicant's argument suggesting that the prior art (Dubnowski) doesn't teach calculating autocorrelation function and detecting the peak in the autocorrelation function is traversed, because according to Dubnowsky, a pitch is determined from the peaks in the autocorrelation function. Dubnowsky further states where "The real-time development of the signal autocorrelation function, and hence the speech pitch period, is facilitated by dividing the processing circuitry of the instant invention into two parallel processing paths. The first processor circuit performs the adaptive clipping operation and also determines the energy level of each sub-interval of processed speech. The second processor circuit computes the autocorrelation function, determines the pitch period from the calculated autocorrelation function, (Col.3, lines 20-30). therefore the examiner maintains the rejection by Dubnowsky.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel D Abebe whose telephone number is 703-308-5543. The examiner can normally be reached on monday-friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 703-305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Abebe Primary Examiner A.U. 2655

A handwritten signature in black ink, appearing to read 'Dan Abebe', with a stylized flourish at the end.

December 2, 2004